



**EDUCATIONAL TRAINING PROGRAM OF DISCIPLINE**  
**“ONCOLOGY, RADIOTHERAPY”**

the main professional educational program of higher education - specialty program in the specialty 31.05.01 General Medicine, approved, May , 24, 2023

Form of education	Full-time
The period of development	6
Department of	radiation diagnostics and radiation therapy with oncology

When developing an educational training program, the discipline is based on:

1. Federal State Educational Standard of Higher Education on specialty 31.05.01 General Medicine, approved by the Ministry of Education and Science of the Russian Federation on February, 09, 2016 №95
2. Academic plan on specialty 31.05.01 General Medicine,  
ЛД-16-04-18 ИИ  
ЛД-16-05-19 ИИ  
ЛД-16-06-20 ИИ,  
approved by the Scientific Council of the Federal State Budgetary Educational Institution of Higher Education «North-Ossetia State Medical Academy» of the Ministry of Healthcare of the Russian Federation “24” May 2023, Protocol № 8.

The educational training program of the discipline was approved at a meeting of the central coordinating training and methodological council from “23” May 2023, Protocol №. 5

The educational training program of the discipline was approved by the Scientific Council of the State Medical University of the Federal State Budgetary Educational Institution of Higher Education «North-Ossetia State Medical Academy» of the Ministry of Healthcare of the Russian Federation from “24” May 2023, Protocol № 8.

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### **Content of the work program**

1. Name disciplines;
2. a list of planned learning outcomes in the discipline, correlated with the planned results of mastering the educational programs;
3. indication of the place of discipline in the structure of educational programs;
4. the volume of discipline in credit units indicating the number of academic or astronomical hours allocated for contact work of students with a teacher (by type of training) and for independent work students;
5. the content of the discipline, structured by topics (sections) indicating the number of academic or astronomical hours allocated to them and types of training sessions;
6. a list of educational and methodological support for independent work of students on discipline;
7. a fund of evaluation tools for conducting intermediate certification of students in the discipline;
8. a list of basic and additional educational literature necessary for mastering the discipline;
9. a list of resources of the information and telecommunications network "Internet" (hereinafter referred to as the "Internet" network) necessary for mastering the discipline;
10. methodological instructions for students on mastering the discipline;
11. a list of information technologies used in the implementation of the educational process in the discipline, including a list of software and information reference systems (with need);
12. description of the material and technical base necessary for the implementation of the educational process for discipline.
13. conducting educational activities using e-learning and distance learning technologies.

**The list of planned learning outcomes in the discipline and the results of mastering the educational program**

No · No · p /p one	Competence number/index	Content of competence	The content of the discipline (or part of it)	Development results		
				know	be able to	own
		2	3	four	5	6
1.	OPK-1; OPK-4; OPK-6; OPK-8; PC-1; PC-2; PC-5; PC-6; PC-8; PC-16; PC-17	readiness decide standard tasks professional noah activities With use eat information nyh, bibliography ical resources medical biological th terminology , information but- communication s onical technologies and taking into account major requirements information Noah security.	1.Physical basics ray therapy. 2. Radiobiologists cal foundations ray therapy malignant s diseases. 3. Radiobiologists cal foundations ray therapy non-tumor diseases.	1. History discoveries x-ray gamma, alpha, beta radiation, 2.stages development and becoming l, physical and technically e basics ray therapy. 3.subject, structure and tasks ray therapy. 3. Radiobio brain teaser basics ray therapy malignant data and non-tumor s diseases th. 4.action ionize current radiation on the tumor biological something action penetrating her radiation. 5. essence of biochemical	1.Interpret results clinically 2.rentgenol ogical. 3.endoscopy iCal, others methods explored and l cancer- nyh. 4. Used vat medical Yu terminalogog ue June.	1.Methods of deontologi at working with oncologist eskim sick 2.Method mi reference medicine coy document tions.

				and pathomorphological processes occurring under the influence of penetrating radiation sensitivity 6. Medical terminology		
2.	OPK-1; OPK-4; OPK-6; OPK-8; PC-1; PC-2; PC-5; PC-6; PC-8; PC-16; PC-17	Ready for collection and analysis patient complaints, his medical history, examination results, laboratory, instrumental, patho-anatomical and other studies in order to recognize the condition or establish the fact of the presence or absence of a disease	1. Methods of radiation therapy. Technical support of radiation therapy.	1. Organization radiology department. 2. classification of methods of radiation therapy. 3. devices of the gamma therapeutic apparatus. radioactive preparations 4. methods of irradiation of patients.	1. Recognize the method of radiation therapy. 2. determine the indications and contraindications for radiation therapy. Recognize the equipment used in various methods of radiation therapy.	1. Method of irradiation therapy, 2. apparatus. 3. methods and management of medical documentation.
3.	OPK-1; OPK-4; OPK-6; OPK-8; PC-1; PC-2; PC-5; PC-6; PC-8; PC-16; PC-17	Ability to definition in patients with their main pathological conditions, symptoms, syndromes of diseases, their nosological forms in accordance with International Statistical Classification of Diseases and Related Health Problems, revised by the 43rd World	1. Methods exposure of patients remote, contact). 2. Planning of radiation therapy. 3. Beam periods -reactions to radiation (local and general). 3. Complications in radiation therapy.	1. Build a plan for remote irradiation (X-ray therapy, tele-gamma therapy). 2. Correct about determine the method of radiation therapy. 3. Prepare patient for treatment, 4. Draw up a treatment plan. 5. prevention	1. Select correct method of irradiation. 2. Build a topometric map, calculate dose and exposure time, fields, etc. 3. Prescribe treatment for reaction and damage and after radiation treatment.	1. Method of irradiation patients (remote, contact). 2. Method of rehabilitation classification of radiation therapy. 3. Methods for the treatment of reactions and injuries after radiation treatment,

		Assembly Healthcare, Mr. Geneva 1989		of radiation reaction tics		
4.	OPK-1; OPK-4; OPK-6; OPK-8; PC-1; PC-2; PC-5; PC-6; PC-8; PC-16; PC-17	ability to apply basic organization and strengthening in the field of protection health of citizens in medical organizations and their structural divisions	Fundamentals of radiation therapy of malignant tumors.	1. Research methods for cancer patients sick. 2. Principles of treatment. 3. Methods for the prevention and treatment of radiation reactions and complicatio ns .	1. Interpret the results of clinical x- ray, x-ray, and other research methods for cancer patients. 2. Calculate the specific and total activity of the radioactive source. 3. determine power doses with roentgenom eter. 4. Calculate the time and patient radiation dose.	1. Mi method deontology when working with oncologica l sick 2. technica l safety when working with radioactive sources; 3. Mi method rehabilitati on classificati on of radiation therapy. 4. Methods of treatment of reactions and injuries after radiation treatment, 5. Methods of mi medical managem ent documentat ion.

### 3. The place of discipline in the structure of the OPOP VO.

1. The discipline "Radiation therapy" belongs to Block 1 of the Federal State Educational Standard of HE in the specialty "General Medicine".

Types of professional activity that underlie the teaching of this discipline :

1. Preventive. 2.Diagnostic. 3. Research.

### 4. Volume disciplines

No. N o. p / p	Type of work		Total credit units	Total hours	Semesters
					#12
					hours
1	2		3	4	5
1	<b>Contact work of students with the teacher (total), including:</b>		2	72	72
2	Lectures (L)			22	22
3	Clinical Practice (PP)			50	50
4	Seminars (C)				
5	Laboratory work (LR)				
6	<b>Student's independent work (SRS)</b>		1	36	36
7	<b>Type of intermediate certification</b>	credit (G)	+	+	+
		exam (E)	-	-	-
8	<b>TOTAL: Total labor intensity</b>	hours		108	108
		Z	3		

## 5. Content disciplines

No./n	No. semester	Name of the topic (section) of the discipline	Types of learning activities (in hours)					Forms of current progress control
			L	LR	PZ	SRS	Total	
1	2	3	4	5	6	7	8	9
1.	12	Organization of oncological care for the population.	2		5	3	10	C,TS.SZ,UZ
2.	12	Cancer and precancerous diseases skin. Cancer of the oral mucosa. Tumors of bones and soft tissues.	2		5	3	10	C,TS.SZ,UZ
3.	12	Precancerous diseases and breast cancer.	2		5	3	10	C,TS.SZ,UZ
4.	12	Precancerous diseases and lung cancer.	2		5	3	10	C,TS.SZ,UZ
5.	12	Cancer of the esophagus, cancer of the stomach. malignant lymphomas. Myeloma.	2		5	3	10	C,TS.SZ,UZ
6.	12	Cancer of the colon and rectum. Tumors hepatopancreatoduodenal zone. Modular activity. Offset.	2		5	6	13	C,TS.SZ,UZ
7.	12	Physical basis of radiation therapy. Radiobiological bases of radiation therapy of malignant and non-tumor diseases	2	-	3	2	7	C,TS.SZ,UZ
8.	12	Methods of radiation therapy. Technical support of radiotherapy	2	-	3	2	7	C,TS.SZ,UZ
9.	12	Radiation therapy planning. Prebeam period. Beam period. Reactions of the body to therapeutic radiation exposure. Post-beam period. Radiation protection of organs and tissues during conducting radiation therapy	2	-	3	3	8	C,TS.SZ,UZ
10.	12	Fundamentals of radiation therapy of malignant tumors of the maxillofacial region.	-	-	3	2	5	C,TS.SZ,UZ
11.	12	Fundamentals of radiation therapy of malignant tumors of the chest and abdominal cavities	2	-	3	3	8	C,TS.SZ,UZ
12.	12	Fundamentals of radiation therapy of malignant tumors of the central nervous system, thyroid gland,	2	-	3	3	8	C,TS.SZ,UZ



		Retroperitoneal space, skeletal system,						
13.	12	Modular lesson credit	-	-	2	-	2	C,TS.SZ,UZ
TOTAL:			22		fifty	36	108	

**Note:** S - interview, TK - test tasks, SZ - situational tasks, KZ - training tasks

## 6. The list of educational and methodological support for independent students in the discipline

work of

No./n	semester number	Name of educational and methodical development
1	12	Methodical manual: "Physical bases of radiotherapy". Vladikavkaz 2008 (Associate Professor Candidate of Medical Sciences Olisaeva E.T).
2.	12	Methodological guide: "Physical foundations of radiology. Radioactivity, radioactive radiation, their characteristics. Radionuclide diagnostics.» Vladikavkaz, 2008 (Associate Professor, Candidate of Medical Sciences Olisaeva E.T., Professor, Doctor of Medical Sciences S.G. Georgiadi, assistants Ph.D. I.Kh.Koraeva, Z.R.Sozanti).
3.	12	Methodological guide: Biological bases of radiation therapy. Classification and planning of radiation therapy. Vladikavkaz 2012 (Associate Professor PhD Koraeva I.Kh., Assistant PhD Gannoshenko E.M. Candidate of Medical Sciences Sozanti Z.R., intern Alieva E.A. Kubantseva I.E.)
4.	12	Methodological guide: «Technological foundations of radiation therapy. Radiation therapy of malignant tumors The reaction of the body to radiation treatment. Vladikavkaz 2012 (Associate Professor Candidate of Medical Sciences Koraeva I.Kh., Assistant Candidate of Medical Sciences Gannoshenko E.M. Candidate of Medical Sciences Sozanti Z.R., intern Alieva E.A. Kubantseva I.E.)
5.	12	Methodological developments for practical exercises in radiation diagnostics and Radiation Therapy No. 10. Vladikavkaz 2010
6	12	Thematic laminated tables

## 7. Fund of assessment tools for conducting intermediate certification of students in discipline

No / p	List of competencies	semester number	Assessment indicator(s)	Evaluation criterion(s)	Evaluation scale	Name FOS
1	2	3	4	5	6	7
1.	OPK-1; OPK-4; OPK-6; OPK-8; PC-1; PC-2; PC-5; PC-6; PC-8; PC-16; PC-17	12	see the standard for assessing the quality of education, approved.	see quality standard education	see education quality assessment standard, approved	Questions offset; Test tasks; Control

			By order of GBOU VPO SOGMA Ministry of Health of Russia  da ted 20.08.2014, №211/o	i, approved By order of GBOU VPO SOGMA Ministry of Health of Russia dated 20.08.2014. , №211/o	By order of GBOU VPO SOGMA Ministry of Health of Russia dated 20.08.2014. , №211/o	tasks
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**8. The list of basic and additional educational literature necessary for mastering disciplines**

## Main literature

p / no.	Name	The authors)	year, place publications	Number of copies		EBS name
				in library	at the departm ent	Link to EBS
1	2	3	4	5	6	7
	Radiation diagnostics: textbook. T.1	ed. G. E. Trufanov	M. : GEOTAR- Media, 2009 2011	198	one	"Student Advisor" <a href="http://www.studmedlib.ru/ru/book/ISBN9785970419274.html">http://www.studmedlib.ru/ru/book/ISBN9785970419274.html</a>
	Radiation diagnostics: textbook	ed. G. E. Trufanov	M. : GEOTAR- Media, 2010 2015	one		"Student Advisor" <a href="http://www.studmedlib.ru/ru/book/ISBN9785970425152.html">http://www.studmedlib.ru/ru/book/ISBN9785970425152.html</a>
	Radiation therapy: textbook. T.2	Trufanov G. E., Asaturyan M.A., Zharinov G. M.	M. : GEOTAR- Media, 2009, 2010	197	one	"Student Advisor" <a href="http://www.studmedlib.ru/ru/book/ISBN9785970415658.html">http://www.studmedlib.ru/ru/book/ISBN9785970415658.html</a>
	Radiotherapy: textbook	Trufanov G. E., Asaturyan M.A., Zharinov G. M.	M. : GEOTAR- Media, 2013			"Student Advisor" <a href="http://www.studmedlib.ru/ru/book/ISBN9785970425145.html">http://www.studmedlib.ru/ru/book/ISBN9785970425145.html</a>
	Radiation diagnostics and therapy. General radiology	S. To Ternova. and others	M. : GEOTAR- Media, 2014			"Student Advisor" <a href="http://www.studmedlib.ru/book/ISBN9785970429891.html">http://www.studmedlib.ru/book/ISBN9785970429891.html</a>
	Radiology: textbook. allowance	ed. A.Yu. Vasiliev	M. : GEOTAR- Media, 2008			"Student Advisor" <a href="http://www.studmedlib.ru/book/ISBN9785970409251.html">http://www.studmedlib.ru/book/ISBN9785970409251.html</a>
	Radiation diagnostics in Dentistry: textbook. allowance	Vasiliev A.Yu., Vorobyov Yu.I., Serova N.S.	M. : GEOTAR- Media, 2010			"Student Advisor" <a href="http://www.studmedlib.ru/book/ISBN9785970415955.html">http://www.studmedlib.ru/book/ISBN9785970415955.html</a>

## additional literature

p / no.	Name	The authors)	Year, place of publicati on	Number of copies		EBS name
				in library	at the departm ent	Link to EBS
1	2	3	4	5	6	7
	Medical radiology and radiology (fundamentals of radiation diagnostics and radiation therapy): textbook	Lindenbraten L. D.	M. : Medicine, 1993	278	one	
	Brief atlas of digital radiography: textbook. allowance	ed. A. Yu. Vasiliev	M. : GEOTAR-Media, 2008	7	one	
	Topographic anatomy and Operative surgery: textbook. In 2 tons.	Sergienko V.I. Petrosyan E. A, Frauchi I. V.	M. : GEOTAR-Media, 2010	T. 1–147 T.2 - 148	-	
	Radiation mammology	Ternovoy S. K.	M. : GEOTAR-Media, 2007.	5		
	X-ray diagnosis of dental diseases: textbook. allowance	Vodolatsky M. P., Vodolatsky V. M., Samokhina N.V.	Stavropol: SGMA, 2006	one		
	Radiation diagnosis of diseases liver (MRI, CT, ultrasound, SPECT and PET)	ed. G. E. Trufanov	M. : GEOTAR-Media, 2007. -	2		
	Radiation diagnosis of diseases of the urinary system, liver and biliary tract and the female reproductive system: a method. student allowance medical, pediatric, dental faculties	Olisaeva E.T. Georgiadi S.G. Koraeva I.Kh. Sozaonti Z.R.	Vladikavkaz, 2010	ten		

	Radiation diagnosis of diseases of the pancreas and spleen, spinal and brain	Olisaeva E.T. Georgiadi S.G. Koraeva I.Kh.	Vladikavkaz, 2010	ten		
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	brain: method. allowance for medical students, pediatric, dental faculties	Sozaonti Z.R.				
	Radiation diagnosis of lung diseases: method. recommendations for medical students, pediatric, medical-prophylactic, dental faculties /	ed. E. T. Olisaeva	Vladikavkaz, 2011	eight		
	Radiation diagnostics of the heart and blood vessels	Olisaeva E.T. Georgiadi S.G. Koraeva I.Kh. Sozaonti Z.R.	Vladikavkaz, 2011	eight		
	Radiation diagnosis of diseases of the esophagus, stomach, intestines: textbook.-method. benefits	Olisaeva E.T. Georgiadi S.G. Koraeva I.Kh. Sozaonti Z.R.	Vladikavkaz, 2009	eighteen		
	Physical foundations of radiation diagnostics and radiation therapy: textbook.-method. development for SOGMA students	Olisaeva E.T. Georgiadi S.G. Koraeva I.Kh. Sozaonti Z.R.	Vladikavkaz, 2008	ten		
	Analysis of the data of radiation research methods based on the principles of evidence-based medicine	Vasiliev A.Yu., Malyi A.Yu., Serov N.S.	GEOTAR-Media, 2008			"Student Advisor" <a href="http://www.studmedlib.ru/book/ISBN9785970408698.htm">http://www.studmedlib.ru/book/ISBN9785970408698.htm</a>
	Radiation diagnostics: textbook	Ilyasova E. B., Chekhonatskaya M. L., Priezzheva V. N.	M. : GEOTAR-Media, 2013			Student Advisor <a href="http://www.studmedlib.ru/book/ISBN9785970427200.html">http://www.studmedlib.ru/book/ISBN9785970427200.html</a>
	Atlas of Radiation Human Anatomy	Filimonov V.I., Shilkin V.V., Stepankov A.A., Churakov	M. : GEOTAR-Media, 2010			"Student Advisor" <a href="http://www.studmedlib.ru/book/ISBN9785970413616.html">http://www.studmedlib.ru/book/ISBN9785970413616.html</a>

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	Magnetic resonance imaging: a guide for physicians	ed. G. E. Trufanov	St. Petersburg: Folio, 2007	one		
	Magnetic Resonance Imaging: Tutorial	ed. S.K. Ternovoy	M. : GEOTAR-Media, 2008			"Student Advisor" <a href="http://www.studmedlib.ru/book/ISBN9785970408353.html">http://www.studmedlib.ru/book/ISBN9785970408353.html</a>

**9.** List of resources of the information and telecommunications network "Internet" required for mastering disciplines

1.Information and legal system "Garant" 2.Information and legal system "Consultant" 3.Information system

"State Register of Medicines"

4. - "Student Advisor" .

Radiation therapy [Electronic resource] / Trufanov G.E., Asaturyan M.A., Zharinov G.M. - M. : GEOTAR-Media, 2013. - <http://www.studmedlib.ru/book/ISBN9785970425145.html>

Radiation diagnostics. AT 2nd volumes. Volume one [Electronic resource] / Akiev R.M., Ataev A.G., Bagnenko S.S. and others. Ed. G.E. Trufanov. - M. : GEOTAR-Media, 2011. -

<http://www.studmedlib.ru/book/ISBN9785970419274.html>

Radiation diagnostics in dentistry [Electronic resource]: textbook / Vasiliev A.Yu., Vorobyov Yu.I., Serova N.S. and others - 2nd ed., add. and reworked. - M. : GEOTAR-Media, 2010. -

<http://www.studmedlib.ru/book/ISBN9785970415955.html>

Radiation diagnostics and therapy. General radiation diagnostics [Electronic resource] / Ternovoy S. K. et al. - M. : GEOTAR-Media, 2014. -

<http://www.studmedlib.ru/book/ISBN9785970429891.html>

**5. - Bulletin of radiology and radiology**

<http://www.russianradiology.ru/jour>

**6. - Russian Electronic Journal of Radiation Diagnostics**

<http://www.rejr.ru/perviy-nomer/vol-6-3-2016.html>

**7. National School of Roentgen Radiology**

<http://www.radiology-school.ru>

**10.** Guidelines for students on mastering the discipline

Training consists of classroom lessons (45), including a lecture course (10) and practical exercises (20), and independent work (15 hours). The main study time is allocated for practical work on the study of methods of radiation therapy, technical support of radiation therapy, planning of radiation therapy, the basics of radiation therapy for malignant tumors. When studying the discipline, it is necessary to use the basic and additional recommended literature and master practical skills in radiation therapy.

Practical classes are conducted in the form of answers to tests, oral questioning, analysis and preparation of a radiation therapy plan, topometric map, presence in the X-ray room during radiation therapy of patients, solving situational problems. In accordance with the requirements of the Federal State Educational Standard for Higher Education, active and interactive forms of conducting classes (video films, situational tasks, independent extracurricular work) are widely used in the educational process. The proportion of classes conducted in interactive forms is at least 5% of the classroom classes.

Independent work of students implies the preparation of the formation of a systematic approach to the analysis of medical information, includes the study of additional literature,

work with medical documentation, writing protocols. Work with educational literature is considered as a type of educational work on the discipline of radiation therapy is performed within the hours allotted for its study (in the IWS section).

Each student is provided with access to the library funds of the academy and the department. During the study of the discipline, students independently draw up protocols for the radiation treatment plan for malignant tumors of various organs and are present during radiation therapy in offices.

The work of a student in a group forms a sense of collectivism and sociability.

#### 11. The list of information technologies used in the implementation of the educational process for discipline

Semester	Type of occupation L, PR, S,	Used educational technologies (active, interactive)	Number of hours	% of classes in an interactive form	Software List
12	L	presentations, videos on lecture topics	22		Microsoft office PowerPoint; Internet Explorer
12	PZ	A set of questions and tasks for practical tasks, a set of situational tasks for APs, X-ray set	fifty	5	Microsoft Office
12	FROM	Questions and tasks for independent work	36		Microsoft Office Internet Explorer

#### 12. Description of the material and technical base necessary for the implementation of the educational process for discipline

No / P	equipment identification	Quantity	Technical condition
1	2	3	4
<b>Special equipment</b>			
1.	classrooms (19.1 sq.m, 22.7 sq.m, 13.6 sq.m)	3	good

2.	staff room (18 sq.m)	one	satisfactory
3.	lecture hall (141.8 sq.m)	one	good
4.	computers	3	satisfactory
5.	notebook	one	good
6.	multimedia complex (laptop, projector, screen)	one	good
7.	negatoscope	ten	satisfactory
8.	slidescope	one	satisfactory
9.	set of radiographs, CT and MR	370	good
10.	radiograph description protocols	90	good
11.	video movies		good
12.	situational tasks		good
13.	tests		good
14.	laminated tables	200	good
15.	X-ray diagnostic devices ROD	four	good
16.	Radiation therapy devices GENUS	3	good
<b>phantoms</b>			
17.	-		
<b>dummies</b>			
18.	-		

13. Conducting educational activities using e-learning and distance learning technologies

In the context of the introduction of restrictive measures (quarantine) associated with the unfavorable epidemiological situation, the threat of the spread of a new coronavirus infection and other forced

major events that do not allow for full-time training sessions, it is possible to study this discipline or part of it using e-learning and distance learning technologies.

Teaching discipline in the situations described above will be carried out through the development of an electronic course with access to video lectures and interactive course materials: presentations, articles, additional materials, tests and various tasks. When conducting training sessions, current monitoring of progress, as well as intermediate certification of students, the platforms of the electronic information and educational environment of the academy and / or other e-learning systems recommended for use in the academy, such as Moodle, Zoom, Webinar, etc., can be used.

Lectures can be presented in the form of audio , video files, "live lectures", etc.

Conducting seminars and practical classes is possible on-line in both synchronous and asynchronous modes. Seminars can be held in the form of web conferences.